Source Water Assessment Program (SWAP) Report For Shops at Carver Crossing

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: March 20, 2001

Table 1: Public Water System (PWS) Information

PWS NAME	Shops at Carver Crossing
PWS Address	96 North Main Street
City/Town	Carver, Massachusetts
PWS ID Number	4052057
Local Contact	Peter Bohan
Phone Number	(781) 826-1200 extension 126

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	4052057-01G	172	516	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas
5. Appendix

1. Description of the Water System

The Well
The Shops at Carver Crossing is a public water system with a single water supply well currently serving a retail plaza. A replacement well was installed in 1997 due to diminished yield from the original well. The depth of the replacement well is not precisely known since a well log is not available. However, the invoice from the well driller indicates 65 feet of 4 inch well casing and 4 feet of well screen material was used for well construction. Based on this invoice the well is likely screened 60-70 feet below grade. Well #1 has a Zone I of 172 feet and an Interim Wellhead Protection Area (IWPA) of 516 feet. The well is located in a sand and gravel aquifer with a high vulnerability to contamination due to the absence of a hydrogeologic barrier that can prevent contaminant

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

migration. Please refer to the attached Map of the Zone I and IWPA.

The Water Quality
The well serving the facility is treated by a limestone contactor. The limestone contactor is designed to raise the pH of the water to reduce its corrosiveness. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1. **With the path**

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:
1. **Inappropriate Activities in Zone I**
2. **Stormwater**
3. **Presence of Oil Contamination Sites within the IWPA**
4. **Underground Storage Tanks (USTs) in IWPA**

The overall ranking of susceptibility to contamination for the well is High, based on the presence of at least one High threat land use or activity in the IWPA, as seen in Table 2.

1. **Zone Is –** Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone I contains a portion of the plaza building and a portion of the access road for plaza deliveries. The public water supplier does not own and/or control all land encompassed by the Zone 1. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

   Recommendations:
   - As previously noted in the Department's approval letter for well #1, the Department provided for certain nonconforming uses (ie. a portion of the plaza building, and the driveway for store deliveries) within the protective radius of the well.
   - Do not use or store pesticides, fertilizers or road salt within the Zone I.

2. **Storm Water-** There are seven (7) catch basins associated with the facilities parking

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Fuel Storage Below Ground	No	Yes	High	There are two (2) active gasoline stations
Storm water drainage system	No	Yes	Moderate	Subsurface drainage system under parking lot
Parking lot, driveways & roads	Yes	Yes	Moderate	Limit road salt usage, existing drainage away from well
Landscaping	No	Yes	Moderate	Fertilizer and pesticide use
Oil and/or hazardous material site	No	Yes	*	refer to Appendix 1 and table 1
Septic System	No	Yes	Moderate	Refer to septic systems brochure
Structures	Yes	Yes	-	Non-water supply structures in Zone I

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

lot. The catch basins transport storm water from the parking lot, roadway and roof run off to the ground. There are four (4) catch basins located in the main parking lot to collect storm water runoff from the parking lot. Storm water from the catch basins is routed to two 30 ft. by 100 ft. storm water leaching fields located under the main parking lot. Roof runoff from the Plaza is directed to downspouts located around the structure. All downspouts on the north side of the building are directed to the subsurface leaching fields. All other downspouts (southern and western) direct storm water to pavement and/or directly to the ground. Storm water from the eastern side of the parking lot discharges to three (3) leaching catch basins located in a shallow retention basin between the Plaza and Plympton Street. There is one (1) catch basin located along Plympton Street in front of the facility.

As flowing storm water travels, it picks up debris and contaminants from streets, parking areas and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents. Pollutants are actually not removed from most catch basins until they are cleaned out. Regular maintenance is required to reduce the risk of resuspension of sediments during large storm events. Maintenance is essential for the proper operation of catch basins and storm water retention structures.

Recommendations:

- If you do not have a storm water maintenance plan developed, develop one. Maintenance plans should identify owners, parties responsible for maintenance and inspection and maintenance schedule. Inlets should be cleaned out a minimum of four times per year and inspected monthly.
- Additionally, street and parking lot sweeping reduces the amount of potential contaminants in storm runoff.
- All sediments and hydrocarbons associated with oil/water separators should be properly handled and disposed in accordance with local, state and federal guidelines and regulations. Catchbasin cleanings are classified as a solid waste and must be handled and disposed of in accordance with all Department regulations, policies and guidance.

3. **Presence of Oil Contamination Sites within the IWPA** – The IWPA for Well #1 contains a DEP Tier Classified Oil and/or Hazardous Material Release Sites indicated on the map as Release Tracking Number 4-0000305. The site is a former gas station location. Refer to the attached map and section 5. Appendix for more information.

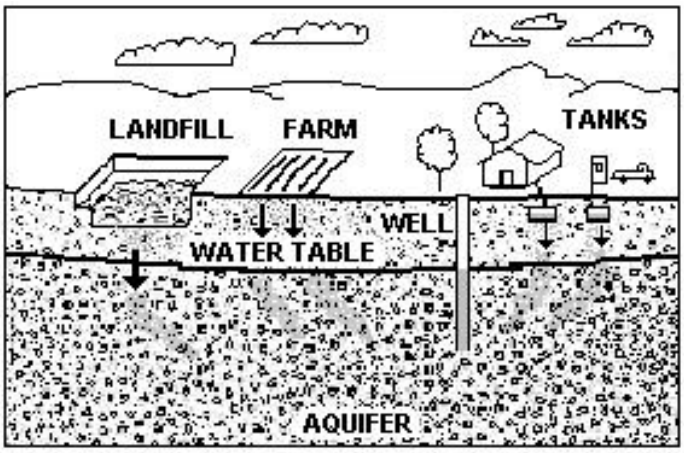

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Recommendation:

- Monitor progress on any ongoing remedial action conducted for the known oil contamination site.

4. **Underground Storage Tank** (UST) - There are USTs containing petroleum products located within the IWPA associated with two (2) gas stations located east and southeast of the Plaza. An UST in the IWPA containing petroleum products is a concern due to the potential threat posed by a release of large quantities of fuel.

Recommendation:

- Work with Town of Carver and businesses in IWPA to ensure that UST's incorporate proper containment and safety practices.

For More Information:

Contact Mark Dakers in DEP's Lakeville Office at (508) 946-2847 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, the town library and the local media.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well #1 susceptibility to contamination. Shops at Carver Crossing should review and adopt the **key** recommendations above and the following:

Zone I:

- Keep non-water supply activities out of the Zone I.
- Prohibit public access to the well by locking facilities, gating roads, and posting signs.
- Conduct regular inspections of the Zone I. Look for illegal dump ing, evidence of vandalism, etc.
- Concrete pads should slope away from well and well casing should extend above ground.
- If it's not feasible to purchase privately owned land within the Zone I at this time, consider a conservation restriction that would prohibit potentially threatening activities or a right of first refusal to purchase the property.
- Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- Post drinking water protection area signs at key visibility locations.
- Work with your community to ensure that stormwater runoff is directed away from the well and is treated according to DEP guidance.

Facilities Management:

- Eliminate non-sanitary wastewater discharges to on-site septic systems. Instead, in areas using hazardous materials, discharge drains to a tight tank or sanitary sewer.
- Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
- Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.

Planning:

- Work with local officials in Carver to include the Shops at Carver Crossing IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.

Funding:

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 2001 "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note: each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Factsheet
- Your Septic System Brochure
- Pesticide Use Factsheet
- Wellhead Protection Grant Program Fact Sheet
- Source Protection Sign Order Form

5. APPENDIX

APPENDIX 1 – Table of Tier Classified Oil and/or Hazardous Material Sites within the Water Supply Protection Areas

DEP's datalayer depicting oil and/or hazardous material (OHM) sites is a statewide point data set that contains the approximate location of known sources of contamination that have been both reported and classified under Chapter 21E of the Massachusetts General Laws. Location types presented in the layer include the approximate center of the site, the center of the building on the property where the release occurred, the source of contamination, or the location of an on-site monitoring well. Although this assessment identifies OHM sites near the source of your drinking water, the risks to the source posed by each site may be different. The kind of contaminant and the local geology may have an effect on whether the site poses an actual or potential threat to the source.

The DEP's Chapter 21E program relies on licensed site professionals (LSPs) to oversee cleanups at most sites, while the DEP's Bureau of Waste Site Cleanup (BWSC) program retains oversight at the most serious sites. This privatized program obliges potentially responsible parties and LSPs to comply with DEP regulations (the Massachusetts Contingency Plan – MCP), which require that sites within drinking water source protection areas be cleaned up to drinking water standards.

For more information about the state's OHM site cleanup process to which these sites are subject and how this complements the drinking water protection program, please visit the BWSC web page at http://www.state.ma.us/dep/bwsc. You may obtain site -specific information two ways: by using the BWSC Searchable Sites database at http://:www.state.ma.us/dep/bwsc/sitellst.htm, or you may visit the DEP regional office and review the site file. These files contain more detailed information, including cleanup status, site history, contamination levels, maps, correspondence and investigation reports, however you must call the regional office in order to schedule an appointment to view the file.

The table below contains the list of Tier Classified oil and/or Hazardous Material Release Sites that are located within your drinking water source protection area.

Table 1: Bureau of Waste Site Cleanup Tier Classified Oil and/or Hazardous Material Release Sites (Chapter 21E Sites) - Listed by Release Tracking Number (RTN)

RTN	Release Site Address	Town	Contaminant Type
4-0000305	Route 44 and 58	Carver	Oil

For more location information, please see the attached map. The map lists the release sites by RTN.